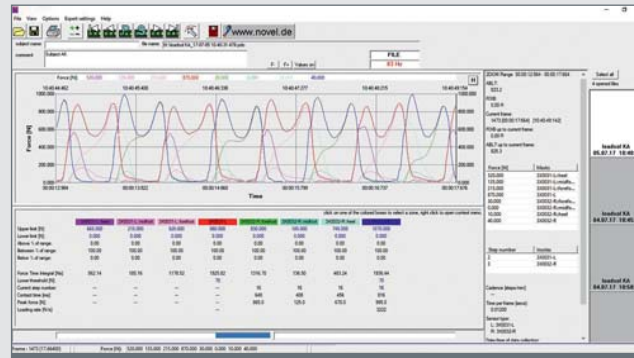




The loadsol® load monitoring device accurately measures the normal plantar force detected inside the shoe during all static and dynamic activities without disturbing the sensation of the foot. This is the first system to utilize full size textile plantar sensor integrated with compact matchbox size wireless electronics for data processing and transmission. In addition, this is the first system of this size and capability which can accurately measure the plantar force between the foot and the shoe without estimation from other variables such as body weight, acceleration, etc.



Evaluation of loadsol® measurement on a Windows PC

Features of the loadsol®

- Measures the plantar force in standing, walking, and running
- Scans the foot with up to 200 Hz
- Displays bipedal force over time and gives biofeedback
- Runs with various apps for biomechanics
- Connects to the novel player software
- Utilizes calibrated, capacitive sensors
- Covers the complete plantar surface of the foot
- Can separate forefoot lateral/medial and hindfoot
- Works with small, lightweight electronics
- Electronics can use coin cells or rechargeable batteries
- Connects to smartphones via Bluetooth®
- Allows ASCII output and comprehensive Windows data analysis

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All systems from novel operate with high quality, calibrated sensors and provide reliable and reproducible long term measurements. loadsol®, artscience® and the novel logo (colored foot) are the registered trademarks of novel gmbh © 1992-2017



loadsol® insole and shoe

Technical data of the loadsol® insole:	
sizes	all sizes and custom made
number of sensors	1, 2, or 3 full plantar area
frequency (Hz)	max. 200 Hz
transmission	Bluetooth® LE
operating device	iPhone, iPad, iPod, Android
battery	3V coin cell / 14 hours or rechargeable cell





The loadsol® insole monitors the normal force between the plantar side of the foot and the shoe.

It is now possible for the first time to accurately measure the force statically or dynamically inside a shoe during standing, walking and running utilizing only up to 3 large sensors which cover the entire plantar surface of the foot. The force between the foot and the shoe is accurately measured regardless of which part of the foot is making contact with the ground. This was not previously possible due to the typical non-linear response of partly loaded pressure sensors.

The loadsol® is based on a new patent on sensor technology. For applications in which the distribution of localized pressure is not of interest, but rather the total load on the foot in up to three areas is of importance, the loadsol® insole is the optimal solution. This new technology has a matchbox sized electronics and communicates wirelessly with a smartphone via Bluetooth®.

The data is transmitted to the smartphone in real-time so that the subject can receive an instantaneous visual, sound or vibration biofeedback.

The data can be stored inside the smartphone or a cloud and later be transferred to a PC software for multiple analysis of the data matching with the specific task. ASCII output is also available.

Long-term monitoring of body load on both feet as well as gait instability, impulse, cadence, balance, fatigue, and performance can be analysed.

The loadsol® insoles come in any foot size and can be custom made in different shapes and for specific applications.

To eliminate any disturbance or influence to the proprioception of the plantar aspect of the foot, the small



electronics are connected to the insole via a very thin flexible band and then attached to the lacing or shoe upper. This method was chosen over embedding the electronics directly into the insole where electronic parts could disturb the sensation.

Additionally, it is possible to place the loadsol® insole in the shoe at the same time as a subject's corrective insole without disturbing the biomechanical function of the correction insole.

Several smartphone apps are available, each tailored to the specific application such as long-term load monitoring with biofeedback, bipedal comparison of normal ground reaction force, balance and stability of gait, and monitoring of running.

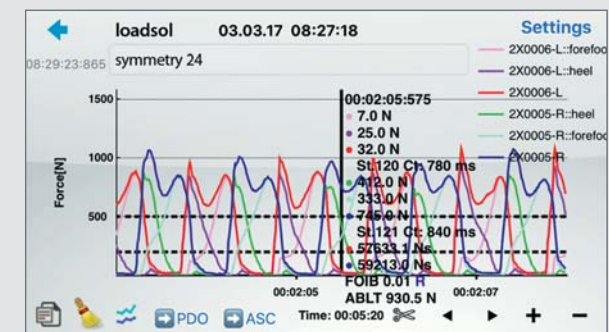
The loadsol® sensor technology can also be supplied as a dorsal pad that can be put on the upper side of the foot to examine the comfort of the shoe.

The measurement rate of the loadsol® insole can be user-defined up to 200 Hz. The raw data are available so that users may program their own applications.

Alternatively, the new Windows loadpad® analysis software can be used for a comprehensive analysis of loadsol® data.



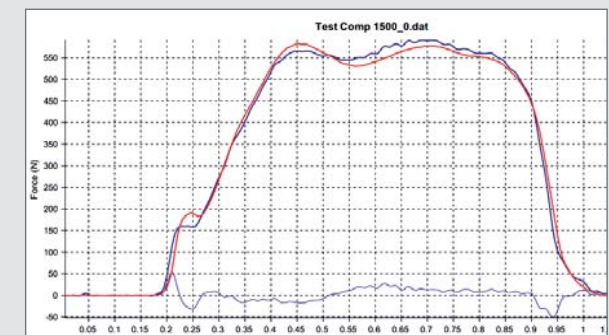
loadsol® measurement in ski boots



Walking symmetry

Subject name: <b>BW: 80 kg</b>	More...	Apply	Cancel
loadsol KA	Interval length [s]:	10	
max Force[N]: 2500	Measurement time [s]:	10000	
Force range [N]: show lines <input checked="" type="checkbox"/>	Visual feedback:	<input checked="" type="checkbox"/>	
upper limit: 500	Protected:	<input type="checkbox"/>	
lower limit: 400	Autostoring:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Biofeedback: <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	with Comment:	<input checked="" type="checkbox"/>	
sound <input checked="" type="checkbox"/> vibrate <input type="checkbox"/>	with ASCII:	<input type="checkbox"/>	

App setting



Force platform versus loadsol®: red = force platform, blue = loadsol® (at 100 Hz)